NOAA FISHERIES

Estuarine and Ocean Ecology at Point Adams

Scientists at the Point Adams Research Station in Hammond, Oregon—*part of NOAA's Northwest Fisheries Science Center—conduct leading-edge research within the Columbia River estuary and plume and in the coastal waters of Oregon and Washington.*

In the Estuarine and Ocean Ecology Program, we oversee an array of field-based research and technology development projects aimed at conserving and managing our nation's living marine resources.

An edge of the Columbia River plume.

The Columbia River Plume

The large volume of fresh water flowing from the Columbia River forms a low-salinity plume of water where it spills into the Pacific Ocean. At times, the boundary between plume water and ocean water is visually distinct, with the turbulent, brown river water colliding into the smoother, blue ocean water.

This plume is a dynamic feature of Oregon and Washington's coastal waters and is an area of high biodiversity. All seaward-migrating juvenile salmon from the Columbia River swim into the plume, where they make their final transition to life in salt water. All returning adult salmon enter the plume as they begin their return journey to their natal streams to spawn. Migrating and resident seabirds and marine mammals use the plume as an important feeding ground.

Research Priorities

Point Adams Research Station biologists and boat operators log an average of 3,800 vessel hours per year while conducting fieldwork in tidal wetlands, backwaters, tributaries, and the mainstem Columbia River, from Bonneville Dam to the coastal Pacific Ocean. Point Adams researchers study organisms such as salmon, crabs, sea lions, zooplankton, and various seabirds.

Our ongoing research projects include:

- **Early ocean survival of juvenile salmon:** To better understand how ocean conditions impact recovery of salmon stocks, Point Adams scientists collaborate with other NWFSC colleagues to observe, quantify, and describe early ocean growth, survival, and fitness of juvenile salmon.

- **Hydrosystem survival of juvenile salmon:** To evaluate the efficacy of hydrosystem management, we developed novel methods of sampling salmon downstream of dams to provide critical estimates of the survival of juvenile salmon through the Columbia River Federal Power System.

- **Estuarine habitat and food webs of juvenile salmon:** This project examines how juvenile salmon habitat and food availability, as well as residence time, in the Columbia River estuary affect the recovery of various salmon populations.

- **Estuary survival of adult salmon:** This project is conducted together with members of the local fishing community. To help distinguish between causes of mortality in the estuary vs. during their ocean phase, we tag and release adult spring-run Chinook salmon and monitor their survival to Bonneville Dam.

- **Food web interactions:** Salmon and eulachon are both ESA-listed species. We study food webs in the river–ocean interface, an area of high biodiversity, and interpret their impact on these threatened species.

- **Dredging and Dungeness crab:** The Columbia River Dungeness crab fishery is the most valuable single-species fishery in Oregon. This study assess the impact of dredging operations by the Army Corps of Engineers, which removes more than 3 million m^3 of sediment from the river mouth each year.

Boatyard and Workshop

The Point Adams Shop Facility includes a secure yard for vessel storage and a 4,000 ft^2 enclosed, heated workspace. The primary role of the shop is maintenance and marine mechanical support for our boatyard, home to NOAA's largest fleet of small vessels (ranging in size from 10 to 41 ft). These 21 research vessels together average 650 days underway each year.

Other shop facility capabilities include welding, carpentry, construction, custom fabrication, and electrical system installation and repairs. Four full-time employees staff the shop, supplemented by numerous seasonal employees in the spring and summer months.

Shop interior, with several research vessels.

For more information on Point Adams research, please visit our website at https://www.nwfsc.noaa.gov/about/facilities/pointadams.cfm.

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All photos by NWFSC/NOAA Fisheries except photo of the Dungeness crab haul from Dan Ayres, WDFW.

Learn more:

Sharing our work with other scientists, policymakers, and the public is important to us. To learn more about what we do, please visit our:

Website: www.nwfsc.noaa.gov
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